



## Training Course Offerings August 2009

### Wind Turbine Technician Course

Date	Subject	Lessons	Estimated Lesson Duration in Hours	Comments
Day 1-2 August 10-11, 2009	Introductions Fall Protection / Climb Test	Tech Safety Lines	16	Two day fall protection course administered by Airstreams or Tech Safety Lines personnel. Will cover extensive usage of fall protection equipment with a climb test performed on a local wind project.
Day 3-4 August 12-13, 2009	Self and Assisted Tower Rescue	Tech Safety Lines	16	This course is offered under the assumption that the Client shall be using Tech Safety Lines self and assisted rescue equipment. Airstreams can also coordinate with other suppliers at the Clients request, however, pricing for this course varies due to Tech Safety Lines travel and lodging costs.
Day 5 August 14, 2009	First Aid,CPR & AED		8	Certified Airstreams instructor / Cards issued upon completion
Day 6 August 17, 2009	OSHA Safety	A. Intro to OSHA B. Electrical OSHA C. Fall Protection OSHA D. PPE OSHA E. Power Tool OSHA F. Walking & Working Surfaces OSHA G. Cranes & Rigging OSHA H. Materials Handling, Storage, Use & Disposal OSHA I. Hot Work/Fire Prevention OSHA J. Confined Space OSHA	8	OSHA Safety Requirements with 10 hour cards issued to students upon completion
Day 7 August 18, 2009		K. Machine Guarding OSHA L. Lock Out Tag Out OSHA M. Hazard Communication OSHA	4	
	Introduction to the Wind Industry Safety in the Wind Park		2 2	Basic overview of wind industry history and where it is headed. Basic wind park safety requirements, Industry related accident examples discussed and analyzed in detail, Accident and Near Miss Reporting, JSA (JSEA) form creation and usage.
Day 8-10 August 19-21, 2009	Voltage Test Procedures 50 Volts or Higher		2	Presentation, videos & quiz. Electrical Hazard Categories, Boundaries, Arc Flash Gear Demonstration, NFPA70E Electrical Safety Requirements.
	Electrical Metering	A. Electrical Measurement Safety B. Multimeters C. Amp Clamps D. Voltage Pens E. Megohmmeters F. Infrared Testers (hand held) G. O Scopes H. Phase Rotation Meters	8	Fluke video and customized presentation with written quiz Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Hands on Lab exam.
	Electrical Metering Practical Exam Compressed Gas Safety / Accumulator Re-Charge Procedures Practical Exam		12 2	Presentation on Compressed Gases Safety and Accumulator Charging and Quiz and hands on Lab Exam
Day 11 August 24, 2009	Electric Static Discharge (ESD) Basic Hydraulics		1 4	Presentation hands on experience & quiz. Presentation & quiz, wind turbine hydraulic diagram understanding. If geared towards a specific turbine it is recommended to incorporate manufacturers drawings into this course.
	Torquing, Fasteners, and Torque Equipment level 1		2	Presentation, quiz and certification. In depth discussion on fasteners and torquing applications. Includes presentation, hands on usage of hand held torque wrenches.
Day 12 August 25, 2009	Turbine Maintenance and Service Practices		3	Presentation & Quiz. Overview of maintenance requirements and practices proven to succeed in the wind industry.
	Wind Turbine Electrical Systems		2	Presentation & quiz. Overview of wind turbine electrical systems and how they work together to form an operating unit.
	Wind Turbine Mechanical Systems		2	Presentation & quiz. Overview of wind turbine mechanical systems and how they work together to form an operating unit.
Day 13 August 26, 2009	Direct Current Theory Direct Current Theory Alternating Current Theory		3 2 3	Classroom presentation & quiz. Lab session Classroom presentation with labs & quiz.
Day 14 August 27, 2009	PLC's & Control Algorithms		4	Presentation & Quiz. Overview on PLC functionality and control algorithms used in the wind industry.
	Wind Turbine Schematics		4	Presentation & Quiz. In depth review of wind turbine schematics and how to successfully navigate them for troubleshooting purposes in the field.
Day 15 August 28, 2009	Wind Turbine Schematics		8	In depth review of wind turbine schematics and how to successfully navigate them for troubleshooting purposes in the field.
Day 16 August 31, 2009	Substations and Transformers		2	Presentation & Quiz. Overview of substation and transformer usage on a typical wind turbine project. Does not cover switching activities.
	Fiber Optics		2	Presentation & quiz, basic fiber optics used in the wind environment and light testing procedures.
	Yaw System		4	Presentation covers turbine yaw, wind instrumentation, data and cable untwisting.

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Day 17 September 1, 2009	SCADA and Data Analysis		2	Discusses the basics of SCADA systems and data analysis. Geared towards the technicians to educate them on the value of disseminating information gathered by SCADA and what to do with it.
	Site Documentation		2	Covers the basics of service reporting and why it is important to the technician and the company. Can be modified to include specific service reporting processes from company to company.
	Wind Turbine Power Curves		2	Covers basic power curve data and what it means in the overall health of a wind turbine. Geared to educate technicians the importance of monitoring production along with availability to stay current in today's market.
	Meteorology		2	Presentation on how meteorology affects the wind industry as well as the technicians that work in the elements
Day 18 September 2, 2009	Drivetrain / Gearboxes / Secondary Braking		2	Presentation & Quiz. Overview of wind turbine mechanical systems and how they work together to form and operating unit.
	Troubleshooting Techniques and Procedures		2	Presentation & Quiz. In-depth troubleshooting theory and techniques proven over the years within the wind industry. Technicians that understand the basics will fix turbines quicker while replacing fewer components. If on site training will take place on actual turbine.
	Site Visit		6	Visit to local wind project. Depends on weather.
Day 19 September 3, 2009	Rotor Construction / Airfoils		1	Presentation & Quiz Discusses the basics of what an airfoil is and the role it plays on a blade. Rotor construction portion covers the basics used by large turbine manufactures in the industry today. Recommend to use the manufactures process and turn it into a turbine specific training program. If done on site with an actual rotor the time increases as reflected.
	Electric Pitch Systems		6	Covers SSB electric pitch systems using schematics
	Blade Pitch and Balancing		1	Classroom training covers the basics of pitch and balance validation for both fixed and variable pitched blades. Recommend manufactures specific process be incorporated into this training program.
Day 20 September 4, 2009	Summary and Final Exam		8	Course review and final exam. Final exam is a closed book test with approximately 150 questions taken from all module quizzes

Total Hours 160  
Total Days 20.00